

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
NONPROVISIONAL PATENT APPLICATION

Title: DISPOSABLE PROTECTIVE DEVICE  
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CROSS-REFERENCES TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application Serial No. 60/413,084, filed on September 24, 2002, entitled DISPOSABLE PROTECTIVE DEVICE.

TECHNICAL FIELD

This invention relates to the field of protection devices for the body. In particular, the present invention relates to an ear protection device for preventing liquid from entering the external auditory canal of an individual's ear.

BACKGROUND OF THE INVENTION

Headbands that function as ear protectors are well known in the art. Such conventional ear protecting headbands have a longitudinal axis which, when the band is worn about the head, circumscribes the head in ovoid fashion. Since the longitudinal axis of a conventional headband lies in a plane, the headbands are worn in canted fashion, facilitating the headband being worn

extending downwardly from the forehead over the ears and around the lower back of the head. When a headband is worn in such a canted fashion, the upper part of the section of the headband on the forehead tends to be pressed into the forehead with greater force than the lower part of the section of the headband on the forehead, making the headband uncomfortable to wear for extended periods of time.

Another disadvantage found in conventional ear protector bands is that they do not effectively prevent water from entering the ears of an individual. When an individual, particularly a child, has an ear infection or has a drainage tube inserted in the ear, it is imperative that water be prevented from entering the external auditory canal of the ear when the child is bathing or similarly interacting with water.

It has long been appreciated that in certain types of activities such as bathing and surgery make an individual's ears vulnerable. One of the hazards of bathing is that water can enter and then remain in a bather's outer ear. This not only can create considerable discomfort due to the motion of the water against the eardrum, but also can result in infection of the ear by organisms present in the water or the ear itself. Additionally, certain ear problems such as chronic otitis media are treated by insertion in the eardrum of a small grommet to provide an air passage across the eardrum. The danger of

infection by water-carried organisms is particularly acute for persons so treated.

Various devices have been available in the past for use by individuals to bar the entry of water into their ears. The most common of such devices are plugs of different shapes, made of materials such as rubber, plastic, and silicone. It is difficult, however, to create a plug that both fits well (i.e., tightly and comfortably) and is not easily dislodged. Bathing caps are also sometimes employed for ear protection, but they are a rather unsatisfactory solution since it is virtually impossible to seal the aperture against water. Indeed, bathing caps are not normally intended by their makers to be used for ear protection. The difficulty of simultaneously satisfying these varied objects is accentuated by the fact that human ears occur in an almost infinite variety of shapes and sizes. To satisfy the needs of the general populace without incurring the manufacturing and marketing overhead of supplying plugs in a wide range of sizes and shapes is challenging. Compromises are often made to reduce the number of earplug sizes to a manageable handful. Consequently, patients in whose eardrums the aforementioned grommets have been placed often find it necessary to have earplugs custom-molded to fit snugly in their ears. Moreover, as many of such patients are young children, such plugs may have only a relatively short lifetime; as the child

grows, he or she outgrows a custom-molded earplug. Not only does this require that a new plug or plugs be made periodically, but it also means that any given earplug is maximally effective only briefly.

The prior ear protection devices, particularly plug type devices, may also feel unnatural and appear unattractive. If the user perceives the appearance to be unattractive, he or she may choose to refrain from using the protector, leading to unnecessarily increased danger of infection.

In each of the above-mentioned situations, the ear protector fails to adequately protect the inner ear, or lacks the requisite degree of comfort. As a result, the aforementioned problems occur and the ear protectors fail to satisfactorily shield the individual from water to any significant degree. Accordingly, a need exists for a protection device that sufficiently shields a portion of an individual's body, such as an ear, from exposure to water in a convenient, comfortable, and effective manner.

#### SUMMARY OF THE INVENTION

The present invention eliminates the above-mentioned needs for a protection device by providing a disposable protection device and method for protecting an individual from exposure to aqueous or other environmental media.

In accordance with the present invention, there is provided a disposable protection device for a portion of an individual's body that comprises a cover layer for partially encompassing the body portion, an elastic portion coupled to a first portion of the cover layer, and an adhesive portion coupled to a second portion of the cover layer.

The present invention is additionally directed to a method for protecting an individual from exposure to environmental media. The method comprises the steps of providing a cover layer for partially encompassing a body portion, coupling an elastic portion to a first portion of the cover layer, and coupling an adhesive portion to a second portion of the cover layer.

#### BRIEF DESCRIPTION OF THE FIGURES

FIGURE 1 is a top view illustration of the preferred embodiment of the present invention.

FIGURE 2 is a bottom view illustration of the preferred embodiment of the present invention of FIGURE 1.

FIGURE 3 is a side view illustration of the preferred embodiment of the present invention of FIGURE 1.

## DETAILED DESCRIPTION OF THE INVENTION

Referring now to Fig. 1, a preferred embodiment of the present invention is illustrated as disposable protection device 10. Disposable protection device 10 includes cover layer 20, elastic portion 30, and adhesive portion 40.

As illustrated in Figs. 1, 2, and 3, elastic portion 30 is coupled to cover layer 20. Cover layer 20 is constructed of a water-repellant material, such as a polymer material or fabric. If the cover material is of fabric, it is preferred that the fabric be treated with a water-repelling composition. Elastic portion 30 is constructed of an elastic material, such as nylon, cotton, lycra, or similarly elastic material. The elastic material of elastic portion 30 may be secured to cover layer 20 by an adhesive, a heat weld, or a radio frequency weld, as is well known in the art.

As is further illustrated in Figs. 1, 2, and 3, adhesive portion 40 is also coupled to cover layer 20. Adhesive portion 40 may also be secured to cover layer 20 by another adhesive, a heat weld, a radio frequency weld, or similar attachment manner well known in the art. Adhesive portion 40 includes an adhesive material, which may be a single-sided adhesive, double-sided adhesive, or other adhesive as is well known.

As is illustrated in Fig. 2, disposable protection device 10 further includes an opening 50. In the preferred embodiment

of the present invention, opening 50 permits the user to insert a portion of their body, such as an ear, into an internal portion of disposable protection device 10 defined by cover layer 20 and excess cover layer material 60.

Insertion into the internal portion is accomplished by stretching the elastic material of elastic portion 30 around and/or over the portion of the body that is to be protected. The resulting placement of elastic portion 30 over the body portion creates at least a partial seal to the environment. To further complete the seal, and thereby protect the user from environmental media, such as water, dirt, air, or the like, the user also engages adhesive portion 40. In the preferred embodiment of the present invention, the adhesive material of adhesive portion 40 adheres to the user in order to complete the seal. Elastic portion 30 and adhesive portion 40 terminate and meet at ends 70 and are substantially contiguous, so as to maintain an effective seal around the portion of the body to be protected.

Excess cover layer material 60 provides extra surface area, which translates into adequate internal volume, for the portion of the body that is to be protected. The water-repellant nature of cover layer 20 prevents the portion of the body from getting wet, and the incorporation of elastic portion 30 and adhesive portion 40 prevent any appreciable amount of environmental media

from entering the internal portion of disposable protection device 10. This keeps the portion of the body that is protected by disposable protection device 10 substantially free from exposure to environmental media from the environment outside the body..

In an alternative embodiment of the present invention (not shown), cover layer 20 can include a liner, such as a thermal insulating material. The incorporation of a liner derived from a thermal insulating material can be used to reduce the rate of dissipation of body heat to the outside environment.

Although only a few exemplary embodiments of the present invention have been described in detail above, those skilled in the art will readily appreciate that numerous modifications are to the exemplary embodiments are possible without materially departing from the novel teachings and advantages of this invention. Accordingly, all such modifications are intended to be included within the scope of this invention as defined in the following claims.